Jaemin **Choi**

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Education

KAIST *Daejeon, South Korea*

M.S. in School of Computing (expected) *Sep. 2021 - Aug. 2023*

- GPA: 4.01 / 4.3
- Advisor: Prof. Jeehoon Kang
- Lab: Concurrency and Parallelism Laboratory (https://cp.kaist.ac.kr/)
- Relevant Coursework: CS560 Database System, CS592 Program Analysis

KAIST *Daejeon, South Korea*

B.S. in School of Computing *Mar. 2017 - Aug. 2021*

- GPA: 3.86 / 4.3
- Relevant Coursework: CS500 Design and Analysis of Algorithms, CS520 Theory of Programming Language, CS422 Computation Theory, CS420 Compiler Design, CS311 Computer Organization, CS330 Operating Systems and Lab, CS230 System Programming

Skills

Programming	Python, Rust, C++
System	Linux
Version Control	Git / GitHub / GitLab
Cloud	Heroku
Misc	Competitive Programming, Coq, LaTeX
Language	Korean (native), English (fluent, TOEFL 103)

Experience

KAIST *Daejeon, South Korea*

Teaching Assistant *Mar. 2021 - Dec. 2021*

- CS230 System Programming (https://cp-git.kaist.ac.kr/cs230/cs230)
- CS220 Programming Principles (https://cp-git.kaist.ac.kr/cs220/cs220-haskell)

Publication

Formal Verification of Chase-Lev Deque in Concurrent Separation Logic

Jaemin Choi *2023*

MS Thesis.

- Formal proof of the correctness of concurrent Chase-Lev work-stealing deque.
- To my knowledge, the first formal verification of Chase-Lev deque that (1) is mechanized in a proof assistant, (2) uses a realistic & unrestrictive implementation, and (3) proves a strong specification.

Modular Verification of Safe Memory Reclamation in Concurrent Separation Logic

Jaehwang Jung, Janggun Lee, **Jaemin Choi**, Jaewoo Kim, Sunho Park, Jeehoon Kang *2023*

Submitted to *ACM SIGPLAN conference on Object-oriented Programming, Systems, Languages, and Applications (OOPSLA) 2023.*

- Formally verified modular specification of hazard pointers and RCU, making it easy to extend a data structure's verification to use safe memory reclamation (SMR) schemes.
- I helped verify the SMR schemes, and verified Chase-Lev deque with SMR.

Compass: Strong and Compositional Library Specifications in Relaxed Memory Separation Logic

Hoang-Hai Dang, Jaehwang Jung, **Jaemin Choi**, Duc-Than Nguyen, William Mansky, Jeehoon Kang, Derek Dreyer *2022*

ACM SIGPLAN conference on Programming Languages Design and Implementation (PLDI) 2022.

- Framework for strong specifications of data structures in relaxed memory model.
- I verified Treiber's stack with the Compass specification.
- Available at: https://dl.acm.org/doi/10.1145/3519939.3523451

Honors & Awards

International Awards

2022 **26th Place**, ICPC World Finals Dhaka — *Dhaka, Bangladesh*

Domestic Awards

2020 **2nd Place**, ICPC Seoul Regional — *Online*
2020 **3rd Place Award**, Samsung Collegiate Programming Cup — *Online*
2019 **7th Place**, ICPC Seoul Regional — *Seoul, South Korea*
2019 **4th Place Award**, Samsung Collegiate Programming Cup — *Seoul, South Korea*
2018 **11th Place**, ICPC Seoul Regional — *Seoul, South Korea*
2018 **Winner**, KAIST ACM-ICPC Mock Competition — *Daejeon, South Korea*

Projects

miniCS: Critical Section Minimization

Academic project — *Oct. 2019 - Dec. 2019*

- Group project for CS454: Artificial Intelligence Based Software Engineering.
- Uses genetic algorithm to insert locks and unlocks in a given C++ program, with the goal of minimizing the critical sections.
- I employed Clang AST to generate the candidate populations for genetic algorithm.
- Available at: https://github.com/hyunsukimsokcho/miniCS

no: Slack Bot

Personal project — *Apr. 2018 - Jun. 2022*

- General-purpose Slack bot supporting various features including todo list, highly configurable Wordle game, image storage, and more.
- Wraps Slack's JSON-based API into a higher-level Python API so that others can more easily contribute.
- Implemented in Python with Slack events API and Dropbox API, and hosted on Heroku server.
- (Yes, the bot is actually named "no")

Extracurricular Activity

Samsung Software Membership — *Seoul, South Korea*

Member — *Aug. 2020 -*

- Membership for Samsung Collegiate Programming Cup award winners & equivalents.
- Wrote posts about advanced algorithms.

Competitive Programming Problem Writer

Jun. 2017 -

- Problem writer for several programming contests, including:
  - 2017, 2021, 2022 UCPC Programming Contest
  - 2017, 2019, 2020, 2021 KAIST ACM-ICPC Mock Competition
  - 2021 KAIST RUN Spring Contest

RUN (Algorithmic Problem Solving Club of KAIST) — *Daejeon, South Korea*

Member & President in 2020 — *Mar. 2017 - Feb. 2021*

- Gained knowledge and experience about competitive programming and algorithms.
- Won awards in several programming contests.
- Problem author of the school programming contests for 4 years.
- Worked as the club president in 2020: taught basic algorithms, and organized 2020 KAIST ACM-ICPC Mock Competition.